

November 29, 2004

Mr. L. William Pearce
Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Post Office Box 4
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2 (BVPS-1 AND 2) -
ISSUANCE OF AMENDMENT RE: CLARIFY THE ULTIMATE HEAT SINK LOW
LEVEL CRITERION CONTAINED IN THE UPDATED FINAL SAFETY
ANALYSIS REPORTS (UFSARS) (TAC NOS. MC1854 AND MC1855)

Dear Mr. Pearce:

The Commission has issued the enclosed Amendment No. 264 to Facility Operating License No. DPR-66 and Amendment No. 145 to Facility Operating License No. NPF-73 for the BVPS-1 and 2. These amendments authorize changes to the BVPS-1 and 2 UFSARs in response to your application dated January 26, 2004, as supplemented September 13, 2004.

These amendments authorize changes to the UFSARs to revise the level of the Ohio River that is assumed at the onset of an accident during power operation to be 654.0' mean sea level (msl) instead of 649.0' msl for BVPS-1 and 2. The proposed change is consistent with current Technical Specification 3.7.5.1, which requires the plant to shut down when the Ohio River reaches a level below 654.0' msl.

These amendments also require that the changes be submitted with the next update of the UFSARs pursuant to 10 CFR 50.71(e). A copy of our safety evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Timothy G. Colburn, Senior Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosures: 1. Amendment No. 264 to DPR-66
2. Amendment No. 145 to NPF-73
3. Safety Evaluation

cc w/encls: See next page

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ACCESSION NO. ML043010574 *Safety Evaluation input provided. No substantive changes made.

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DATE	11/17/04	11/16/04	09/22/04	11/24/04	11/23/04

OFFICIAL RECORD COPY

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PENNSYLVANIA POWER COMPANY

OHIO EDISON COMPANY

FIRSTENERGY NUCLEAR OPERATING COMPANY

DOCKET NO. 50-334

BEAVER VALLEY POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 264
License No. DPR-66

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by FirstEnergy Nuclear Operating Company, et al. (the licensee), dated January 26, 2004, as supplemented September 13, 2004, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, changes to the Updated Final Safety Analysis Report (UFSAR) for Beaver Valley Power Station, Unit No. 1, to revise the level of the Ohio River that is assumed at the onset of an accident during power operation to be 654.0' Mean Sea Level (msl) instead of 649.0' msl as set forth in the application for license amendment by FirstEnergy Nuclear Operating Company dated January 26, 2004, as supplemented September 13, 2004, are authorized. The licensee shall submit the changes authorized by this amendment with the next update of the UFSAR in accordance with 10 CFR 50.71(e).
3. This license amendment is effective as of the date of its issuance and shall be implemented as specified in paragraph 2. above.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Richard J. Laufer, Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Date of Issuance: November 29, 2004

PENNSYLVANIA POWER COMPANY
OHIO EDISON COMPANY
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
THE TOLEDO EDISON COMPANY
FIRSTENERGY NUCLEAR OPERATING COMPANY
DOCKET NO. 50-412
BEAVER VALLEY POWER STATION, UNIT 2
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 145
License No. NPF-73

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by FirstEnergy Nuclear Operating Company, et al. (the licensee), dated January 26, 2004, as supplemented September 13, 2004, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, changes to the Updated Final Safety Analysis Report (UFSAR) for Beaver Valley Power Station, Unit No. 2, to revise the level of the Ohio River that is assumed at the onset of an accident during power operation to be 654.0' Mean Sea Level (msl) instead of 649.0' msl as set forth in the application for license amendment by FirstEnergy Nuclear Operating Company dated January 26, 2004, as supplemented September 13, 2004, are authorized. The licensee shall submit the changes authorized by this amendment with the next update of the UFSAR in accordance with 10 CFR 50.71(e).
3. This license amendment is effective as of the date of its issuance and shall be implemented as specified in paragraph 2. above.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Richard J. Laufer, Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Date of Issuance: November 29, 2004

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NOS. 264 AND 145 TO FACILITY OPERATING
LICENSE NOS. DPR-66 AND NPF-73
PENNSYLVANIA POWER COMPANY
OHIO EDISON COMPANY
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
THE TOLEDO EDISON COMPANY
FIRSTENERGY NUCLEAR OPERATING COMPANY
BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2 (BVPS-1 AND 2)
DOCKET NOS. 50-334 AND 50-412

1.0 INTRODUCTION

By application dated January 26, 2004, as supplemented September 13, 2004, the FirstEnergy Nuclear Operating Company (FENOC, the licensee), requested changes to the Updated Final Safety Analysis Reports (UFSARs) for BVPS-1 and 2. The supplement dated September 13, 2004, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on March 16, 2004, (69 FR 12369).

The proposed amendments request authorization to change the UFSARs to revise the level of the Ohio River that is assumed at the onset of an accident during power operation to be 654.0' mean sea level (msl) instead of 649.0' msl for BVPS-1 and 2. The proposed change is consistent with current Technical Specification (TS) 3.7.5.1, which requires the plant to shut down when the Ohio River reaches a level below 654.0' msl. The minimum Ohio River level that is assumed for long-term decay heat removal purposes is not affected by this change.

Background

The ultimate heat sink (UHS) for BVPS-1 and 2 is the Ohio River, which is maintained at a normal water level of 664.5' msl. This level is maintained by a series of dams on the Ohio River that are operated by the U.S. Army Corps of Engineers. The details of the UHS were initially set forth in the BVPS-1 Preliminary Safety Analysis Report (PSAR) in 1970. It stated that the initial design allowed full power operation down to a low river level of 649.0' msl, and a minimum

ENCLOSURE

flow rate of 2500 cubic feet per second (cfs) based on previously recorded flows, on the Ohio River, over a 37-year period. The initial low river water level of 649.0' msl assumed no credit for the downstream New Cumberland Dam, which controls the level of the Ohio River.

During the Nuclear Regulatory Commission's (NRC's) review of the BVPS-2 PSAR, issues arose regarding the design-basis minimum river water flow rate of 2500 cfs and whether or not this value took into consideration drought-induced flows. It was determined that during a drought the minimum river flow rate could be as low as 800 cfs. Since only 20 cfs is needed for safe shutdown of the plant, this new design minimum flow rate was considered to be adequate for safety-related applications, but the resultant river level would be well below the minimum design-basis level of 649.0' msl. As a result, TS 3.7.5.1 was established to prohibit power operation below a river level of 654' msl to ensure safe shutdown of the plant under severe drought conditions. Although TS 3.7.5.1 was implemented, the description in the UFSAR was not changed to reflect this requirement. The licensee later determined, through information provided by the U.S. Army Corps of Engineers, that the river water level would never go below the normal level during a drought due to control of the river via the downstream dam. This eliminated the dependency of river water level on river water flow rate.

2.0 REGULATORY EVALUATION

The NRC staff finds that the licensee, in Section 5.2 of its submittal dated January 26, 2004, identified for the most part, the regulatory requirements that are applicable to this license amendment request. The regulatory requirements that are most applicable and on which the NRC staff based its acceptance are:

1. Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Appendix A, General Design Criterion (GDC) 2, "Design Bases for Protection Against Natural Phenomena," which requires that "structures, systems, and components important to safety be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunamis, and seiches without loss of capability to perform their safety functions."
2. Part 50, Appendix A, GDC 44, "Cooling Water." This criterion requires that a system be provided to "transfer heat from structures, systems, and components important to safety, to an ultimate heat sink. The system safety function shall be to transfer the combined heat load of these structures, systems, and components under normal operating and accident conditions.

Regulatory Guide (RG) 1.27, "Ultimate Heat Sink for Nuclear Power Plants," provides guidance for evaluating the UHS capability relative to GDCs 2 and 44. Generic Letter (GL) 89-13, "Service Water System Problems Affecting Safety-Related Equipment," will also be applied towards the review of the UHS to verify compliance with GDC 44.

Acceptance of the proposed changes to the UFSARs for BVPS-1 and 2 will be judged based on whether the proposed changes are consistent with the requirements of GDC 2, GDC 44, the criteria stated in RG 1.27, and the recommendations provided in GL 89-13.

3.0 TECHNICAL EVALUATION

As indicated in the UFSAR for BVPS-1 and 2, the design-basis water level of the Ohio River that is currently credited for accident mitigation during full-power operation is 648.6' msl. However, due to the gradual accumulation of silt in the river water intake for BVPS-1 and 2, sufficient cooling water flow for accident mitigation is not assured at the design-basis river water level of 648.6' msl. Therefore, the licensee proposes to credit 654' msl as the design-basis low river water level for accident mitigation during full-power operation consistent with the requirement of TS 3.7.5.1 that was previously established. TS 3.7.5.1 requires BVPS-1 and 2 to be shutdown if the Ohio River level should decrease below 654' msl. Therefore, the NRC staff agrees that the design-basis water level of the Ohio River that is credited at the onset of an accident during power operation can be increased to 654' msl.

Aside from the initial river water level that is assumed at the onset of an accident during power operation, the review criteria stated in RG 1.27 indicates that the UHS should be capable of mitigating postulated accident conditions assuming a single-failure of man-made structural features. In response to a request for additional information, the licensee provided its assessment of this review criterion in a letter dated September 13, 2004. The licensee clarified the bounding low river water scenario, which includes:

- occurrence of a design-basis accident (DBA) on one BVPS unit with the Ohio River level at 654.0' msl concurrent with an extremely low river water flow rate of 800 cfs.;
- a coincident shutdown of the opposite BVPS unit from full-power operation;
- a postulated cooling water temperature of 90 EF for BVPS-1 and 89 EF for BVPS-2; and
- a single failure in either an onsite system or in an offsite manmade structure, e.g, a dam-related failure.

The licensee determined that the accident unit will either be in MODE 5 or in long-term, post-accident cooling with the containment returned to sub-atmospheric conditions when the postulated dam failure occurs, i.e., 24 hours post-accident. Following a failure of the dam, it will take approximately 30 hours for the river level to drop from 654' msl down to 650' msl, where operator action is relied upon to throttle cooling water flow down to 7500 gpm from each intake structure bay; and the lowest postulated river level of 648.6' msl that is credited for long-term cooling is reached in approximately 14 more hours. Based on the information that was provided, the NRC staff finds that the licensee has adequately considered and evaluated the worst case DBA scenario, and that BVPS-1 and 2 are capable of mitigating the event and providing long-term cooling in accordance with RG 1.27 criteria. The licensee has also confirmed that procedures have been established and implemented to ensure appropriate operator response for mitigating the event and for provide long-term cooling. The NRC staff has determined that the applicable criteria stated in RG 1.27 continue to be satisfied by the proposed change.

Finally, because the accumulation of silt in the river water intake tends to degrade the accident mitigation capability of the UHS, the NRC staff requested that the licensee describe measures that were being taken to assure the continued capability of the UHS to perform its safety function and provide long-term cooling commensurate with GL 89-13 recommendations. The licensee provided additional information to address the NRC staff's request in its letter dated September 13, 2004. The licensee described its bay cleaning surveillance tests which consist

of as-found silt depth measurements on both the river side and the pump side of the traveling screens, assessment of the type and extent of any macro-biological accumulation that is present, and cleaning of the bays on both sides of the traveling screens. The intake bay cleaning is performed at a frequency of 12 weeks for the main intake bays and 24 weeks for the auxiliary intake bays, thereby, providing assurance that silt accumulation will not impact plant system cooling functions. The NRC staff has determined that the measures being taken to assure the continued capability of the UHS to perform its safety function and to provide long-term cooling are acceptable.

The NRC staff has reviewed the proposed change to increase the minimum required Ohio River water level that is credited for accident mitigation during power operation of BVPS-1 and 2 from 648.6' msl to 654' msl. Based on a review of the information that was provided, the NRC staff finds that the applicable review criteria stated in RG 1.27 will continue to be satisfied following implementation of the proposed change, and measures commensurate with those that were recommended by GL 89-13 will assure that any silt buildup will not compromise the ability of the UHS to perform its safety function. On this basis, the NRC staff finds that the proposed change satisfies the requirements of GDC 2 and GDC 44; and, therefore, the proposed change is acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Pennsylvania State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (69 FR 12369). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: C. Araguas
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Date: November 29, 2004